

1 **DIRECT TESTIMONY OF**

2 **STEPHEN A. BYRNE**

3 **ON BEHALF OF**

4 **SOUTH CAROLINA ELECTRIC & GAS COMPANY**

5 **DOCKET NO. 2009-489-E**

6 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND**
7 **POSITION.**

8 A. My name is Stephen A. Byrne and my business address is 220
9 Operation Way, Cayce, South Carolina. I am Executive Vice President and
10 Chief Nuclear Officer of South Carolina Electric & Gas Company
11 (“SCE&G” or the “Company”).

12 **Q. DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
13 **BUSINESS EXPERIENCE.**

14 A. I have a Chemical Engineering degree from Wayne State University.
15 After graduation, I started my nuclear career working for the Toledo Edison
16 Company at the Davis-Besse Nuclear Plant. I was granted a Senior Reactor
17 Operator License by the Nuclear Regulatory Commission (“NRC”) in 1987.
18 From 1984 to 1995, I held the positions of Shift Technical Advisor, Control
19 Room Supervisor, Shift Manager, Electrical Maintenance Superintendent,
20 Instrument and Controls Maintenance Superintendent, and Operations
21 Manager. I began working for SCE&G in 1995 as the Plant Manager at the
22 V. C. Summer plant. Thereafter, I was promoted to Vice President at the

1 V. C. Summer plant. In 2004, I was promoted to the position of Senior
2 Vice President of Generation, Nuclear and Fossil Hydro. I was recently
3 promoted to the position of Executive Vice President for Generation.

4 **Q. WHAT ARE YOUR DUTIES WITH SCE&G?**

5 A. I am in charge of overseeing the generation of electricity for the
6 Company, and as Chief Nuclear Officer, I also oversee all nuclear
7 operations.

8 **Q. HAVE YOU EVER TESTIFIED BEFORE THIS COMMISSION?**

9 A. Yes. I have testified before the Public Service Commission of South
10 Carolina (the "Commission") in several past proceedings, including the
11 Company's last rate case in Docket No. 2007-229-E.

12 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

13 A. The purpose of my testimony is to discuss the operating performance
14 and current state of the Company's electric generating units and the
15 environmental regulations and compliance issues facing the Company. My
16 testimony has two broad themes: (1) the Company has made significant
17 investments since the last electric rate case to comply with increasingly
18 stringent environmental and safety laws and regulations; and (2) the
19 Company has experienced increased costs in continuing to provide safe and
20 reliable service to its customers. I will also provide the details related to
21 several specific generation related pro-forma adjustments, including the
22 environmental upgrades at the Williams, Wateree, and Cope Plants; the

1 new peaking units at Plant Hagood; the revised turbine maintenance
2 accrual; the Company's coal inventory levels. I will also briefly discuss the
3 construction of V.C. Summer Station Units 2 & 3.

4 **GENERATION**

5 **Q. PLEASE GIVE A SHORT DESCRIPTION OF THE COMPANY'S**
6 **ELECTRIC FACILITIES.**

7 A. SCE&G owns and/or operates ten (10) coal-fired fossil fuel units
8 (2,404 MW), one (1) cogeneration facility (90 MW), eight (8) combined
9 cycle gas turbine/steam generator units (gas/oil fired, 1,326 MW), sixteen
10 (16) peaking turbines (348 MW), five (5) hydroelectric generating plants
11 (221 MW), and one (1) Pump Storage Facility (576 MW). The total net
12 non-nuclear summer generating capability rating of these facilities is 4,965
13 megawatts. In addition, SCE&G operates the V.C. Summer Nuclear
14 Station ("VCSNS" or "Summer Station") which it owns jointly with the
15 South Carolina Public Service Authority or Santee Cooper. Summer
16 Station was originally rated to generate 900 MW but over the years
17 SCE&G and Santee-Cooper have invested capital to increase the net
18 dependable output of the plant to 966 MW on a sustained, reliable basis.
19 Combining SCE&G's fossil-hydro capacity with its two-thirds interest in
20 the V.C. Summer plant, the total net generating capability of all SCE&G
21 facilities is 5,609 MW.

1 **Q. HOW MUCH ELECTRICITY WAS GENERATED BY SCE&G IN**
2 **2009?**

3 A. In 2009, SCE&G's 74 fossil, hydro, biomass and nuclear generation
4 units generated 24,871,750 megawatt hours ("MWH") of electricity. Of
5 this amount, the coal plants generated approximately 50%, the combined
6 cycle units generated approximately 26%, the gas peaking turbines and
7 hydro facilities generated approximately 4%, the nuclear plant generated
8 approximately 19%, and a biomass generation facility generated
9 approximately 1%.

10 **Q. PLEASE DISCUSS THE AVAILABILITY OF SCE&G'S FOSSIL**
11 **PLANTS.**

12 A. Availability is a measure of the actual hours that the generation units
13 are ready and able to provide electricity divided by the total hours in the
14 twelve-month review period. SCE&G's coal and combined cycle gas fleet
15 had an availability factor of 87.15% in 2009. Availability is not affected by
16 how the unit is dispatched or by the demand from the system when
17 connected to the grid. However, it is impacted by the planned maintenance
18 shutdown hours. For comparison purposes, the North American Electric
19 Reliability Council ("NERC") national five-year average (2004-2008) for
20 availability from all units was 87.32%. SCE&G's availability factor was
21 slightly lower than the NERC national five-year average due to a number of
22 major planned outages. However, during the summer peak period, June 1,

1 2009 through September 30, 2009, SCE&G operated at an availability
2 factor of 96%.

3 **Q. WHAT WAS SCE&G'S FOSSIL SYSTEM FORCED OUTAGE**
4 **RATE FOR 2009?**

5 A. The system forced outage rate for SCE&G's coal and combined
6 cycle gas units during 2009 was 1.42%. This forced outage rate is
7 extremely favorable when compared to the national five-year average for
8 forced outage rates on all fossil units which is 5.92%. These are very good
9 results given the age of our base-load fleet. All of our coal fired generation
10 stations except for Cope were built between 1953 and 1973 and VCSNS
11 Unit 1 has been in operation for over 27 years. These older plants continue
12 to provide reliable service because of careful maintenance, conservative
13 operation, and continued capital investment in renewing and replacing the
14 systems on which their reliability depends.

15 **Q. WHAT IS HEAT RATE AND WHAT WAS THE HEAT RATE OF**
16 **THE FOSSIL UNITS DURING THE PAST YEAR?**

17 A. Heat rate is a way to measure thermal efficiency of a power plant
18 fuel cycle. It is the number of British Thermal Units (Btu) of fuel required
19 to generate one (1) kilowatt-hour (kWh) of electricity. Lower heat rates
20 indicate more efficient utilization of fuel. The average heat rate for the
21 SCE&G coal fired units during 2009 was 9,772 Btu/KWh which compared
22 to the 2008 national average heat rate of 10,364 for all coal units. The 2009

1 national average heat rate has not yet been published. When compared to
2 the 2008 national average heat rate, SCE&G's average heat rate for 2009
3 resulted in a savings of 291,826 tons of coal which equals a cost savings to
4 SCE&G and its customers of \$32,847,086.

5 The heat rates for several of our plants put them among the most fuel
6 efficient coal plants in the nation. In 2009, Electric Light and Power trade
7 publication issued its heat rate rankings for the year 2008. Out of a total of
8 1,249 plants nationally, McMeekin Station was ranked as the 4th most
9 efficient plant in the country and Cope Station was ranked as the 12th most
10 efficient plant in these rankings. In the heat rate rankings for the year 2007,
11 Cope Station was the 4th most efficient plant in the country, McMeekin
12 Station was the 11th, and Williams Station was 16th.

13 **Q. HAS THE COMPANY RECEIVED ANY OTHER AWARDS OR**
14 **RECOGNITION FOR ANY OF ITS GENERATING PLANTS?**

15 A. Yes. The Company's Jasper Generating Station received the 2009
16 Combined Cycle Journal Best Practice Award in O&M for the
17 implementation of an innovative make-up water degasification system to
18 prevent boiler corrosion and boiler tube leaks. More recently, Combined
19 Cycle Journal has awarded three 2010 Best Practice Awards to Jasper in the
20 areas of Safety, O&M and Design, and it is in contention for three "Best of
21 the Best" awards in those categories at the Journal's annual meeting to be
22 held in April 2010.

1 **Q. PLEASE DESCRIBE THE PERFORMANCE OF THE COMPANY'S**
2 **NUCLEAR OPERATIONS.**

3 A. During the test period, VCSNS generated 8,553,990 MWHs of
4 electricity. As defined by Section 58-27-865 of the South Carolina Code of
5 Laws, as amended, Summer Station's net capacity factor based on
6 reasonable excludable nuclear system reductions was 101.1% during the
7 test year. VCSNS is typically rated in the top 20 nuclear units by capacity
8 factor in non-refueling outage years; the last such year was 2007 when the
9 plant was rated 3rd in the country with a 99.07% capacity factor for that
10 period. During the test period, VCSNS achieved its longest period of
11 continuous full power operations since it was placed in commercial
12 operation in 1984.

13 **Q. PLEASE EXPLAIN THE ROLES OF INPO AND THE NRC WITHIN**
14 **THE NUCLEAR INDUSTRY AND DESCRIBE ANY RANKINGS**
15 **RECEIVED BY VCSNS FROM THOSE AGENCIES.**

16 A. VCSNS has continuously met or exceeded all Nuclear Regulatory
17 Commission ("NRC") requirements and Institute of Nuclear Power
18 Operations ("INPO") standards. INPO is a nonprofit corporation
19 established by the nuclear industry to promote the highest levels of nuclear
20 safety and plant reliability. INPO promotes excellence in the industry in
21 the operation of nuclear generating plants. In VCSNS's two most recent
22 ratings, in 2007 and 2009, INPO rated its overall performance as excellent,

1 with no significant weaknesses noted. The NRC is responsible for the
2 licensing and oversight of the civilian use of nuclear materials in the United
3 States. During each year since SCE&G's last rate proceeding, the NRC has
4 found that VCSNS operated in a manner that preserved public health and
5 safety and fully met all the reactor oversight process ("ROP") cornerstone
6 objectives.

7 **Q. PLEASE DESCRIBE WHAT NEW GENERATION FACILITIES**
8 **THE COMPANY HAS PLACED OR IS EXPECTED TO PLACE**
9 **INTO SERVICE.**

10 A. In order to continue to meet its energy production needs in the near
11 future, the Company has recently purchased two (2) 23 MW (nameplate
12 capacity) peaking turbines which are locating at the Company's Hagood
13 Gas Generating Station facility in North Charleston, South Carolina, where
14 they will be available to support service to the Charleston peninsula. These
15 units replace older units that were taken out of service due to safety issues.
16 The expected net dependable summer time capacity for these units is
17 approximately 34 MW. One turbine is designed to be permanently
18 mounted while the other is a trailer mounted unit. Both have quick-start
19 and black-start capability which makes them particularly useful in
20 responding to system emergencies and events. Black-start units can be
21 started when there is no electrical service to the site of the units' location.

1 **Q. WHEN WERE THESE PEAKING TURBINES PLACED IN**
2 **SERVICE?**

3 A. These units were placed in service earlier this year. As Mr. Swan
4 will testify, we are asking that the costs associated with these units be
5 added to plant in service as a known and measurable change to our
6 investment in generation assets. The capital cost of these two generating
7 units as installed is approximately \$45 million.

8 **ENVIRONMENTAL AND SAFETY REQUIREMENTS**

9 **Q. PLEASE DISCUSS THE CAPITAL INVESTMENT THE COMPANY**
10 **HAS RECENTLY MADE IN ENVIRONMENTAL AND SAFETY**
11 **UPGRADES AT ITS FACILITIES.**

12 A. Since 2007, the Company has undertaken environmental and safety
13 related projects representing approximately \$634.3 million in capital spent
14 by SCE&G. The bulk of these projects were required by State and federal
15 regulators to reduce emissions of criteria air pollutants such as Nitrogen
16 Oxides (NO_x) and Sulfur Dioxide (SO₂) from its coal fired electric
17 generating units. The principal projects during this period were:

- 18 • In order to reduce emissions of SO₂, a flue gas desulphurization unit
19 and related facilities (“scrubber”) were installed at Williams Station.
20 Williams Station is a single unit 610 megawatt (“MW”) coal-fired
21 generating plant located at Bushy Park, in Berkeley County. The
22 cost of the scrubber at Williams was approximately \$258.9 million.

- 1 • A scrubber was also installed at Wateree Station. Wateree Station is
2 a 700 MW dual unit coal-fired generating plant, located in Richland
3 County, South Carolina. The cost of the scrubber at Wateree Station
4 is expected to be approximately \$283.4 million
- 5 • A selective catalytic reactor (“SCR”) was installed at Cope Station,
6 in order to reduce emissions of NO_x. Cope Station is a single unit
7 420MW coal-fired generating plant located in Orangeburg County,
8 South Carolina. The cost of this project was approximately \$70.1
9 million.
- 10 • SCE&G has also invested in a number of other smaller
11 environmental projects at its plants whose total capital cost is
12 approximately \$21.9 million.

13 The total aggregate cost of the above projects is approximately
14 \$634.3 million.

15 In addition to these projects, SCE&G completed the construction of
16 a back-up dam at the site of the Saluda Hydro Project at Lake Murray in
17 Lexington County in 2005. The construction of this supplementary dam
18 was required by order of the Federal Energy Regulatory Commission
19 (“FERC”) to protect down-stream residents and infrastructure in case of a
20 cataclysmic earthquake in the area. The total cost of the Saluda Dam
21 Remediation Project, as of September 30, 2009, was approximately \$328.6

1 million. SCE&G elected to use synthetic fuel tax credits it earned through
2 investments made outside of its regulated activities to defray much of the
3 cost of this project. Other utilities used the tax credits to increase earnings
4 with no direct benefit to customers. SCE&G's tax credits have been
5 sufficient to defray approximately \$254.4 million or 77% of the cost of the
6 dam remediation project, thereby keeping the vast majority of this project
7 out of rate base. After application of the tax credits, the net unrecovered
8 capital cost to SCE&G's electric system for this \$328.6 million safety
9 improvement is approximately \$74.2 million.

10 **Q. WHY HAS THE COMPANY INSTALLED THE TWO SCRUBBERS**
11 **AND NEW SCR UNIT AT ITS PLANTS?**

12 A. Under the Clean Air Act, the United States Environmental
13 Protection Agency ("EPA") has regulated NO_x and SO₂ discharges and has
14 required certain states including South Carolina to enact a State
15 Implementation Plan to address air quality issues. The South Carolina State
16 Implementation Plan (the "Plan") became effective in May 2004 and
17 required, among other things, the reduction of NO_x emissions from coal-
18 fired generating facilities in the months of May through September until
19 2009 when the EPA's Clean Air Interstate Rule ("CAIR") limits would
20 become effective. The EPA issued CAIR in March 2005 to require the
21 District of Columbia and twenty-eight states, including South Carolina, to
22 attain mandated air quality levels by reducing SO₂ and NO_x emissions.

1 CAIR established emission limits to be met in two phases for NO_x (2009
2 and 2015) and two phases for SO₂, (2010 and 2015). A federal appeals
3 court has ruled that current CAIR rules are flawed and has ordered the EPA
4 to reconsider them. However, the initial CAIR rules remain in effect
5 pending reconsideration. CAIR and the Plan directly impacted SCE&G
6 and GENCO.

7 In addition, the Clean Air Mercury Rule (“CAMR”) applies to coal
8 fired-generating plants and limits total mercury emissions from all such
9 plants in the United States to 38 tons by 2010, and to 15 tons by 2018.
10 While the CAMR was vacated by the courts in 2008, new rules are
11 expected from EPA in the near future.

12 The two scrubbers at Williams and Wateree are necessary to meet
13 the current CAIR requirements and any revised requirements that EPA may
14 impose when CAIR and CAMR are reissued. The Williams and Wateree
15 scrubbers are expected to reduce SO₂ emissions from each plant by
16 approximately 95% and emissions from SCE&G’s entire generation system
17 by approximately 56%. These scrubbers also will reduce mercury
18 emissions from each plant by more than 80%. The SCR at Cope Station
19 will reduce NO_x emissions from that plant by approximately more than
20 70%.

21 **Q. PLEASE DESCRIBE THE COMPONENTS INCLUDED IN THE**
22 **CAPITAL INVESTMENT TOTAL FOR THE SCRUBBERS.**

1 A. Included in the costs listed above are the costs of the scrubbers and
2 SCR's themselves, the cost of a new induction draft fan for Williams
3 Station that was necessitated by the operating requirements of the
4 scrubbers, and the cost of disposal facilities for scrubber wastes at Williams
5 and Wateree Stations. All of these are necessary components of the overall
6 scrubber projects.

7 **Q. WHAT IS THE CURRENT STATUS OF THE SCRUBBERS?**

8 A. The Williams scrubber was tested and tuned beginning in the fall of
9 2009 and has operated reliably since that time. At the conclusion of testing
10 and tuning in February 2010, it was placed in commercial service. The
11 Wateree scrubber was essentially completed in early 2009 but startup was
12 delayed by the permit appeals from a local landowner which held up final
13 landfill and National Pollution Discharge Elimination System ("NPDES")
14 discharge pond construction. The scrubber cannot run without these items.
15 The administrative law judge ruled in SCE&G's favor in December 2009
16 on the permit appeals and the Company is moving forward with the landfill
17 and pond final construction. The Company has applied for a modification
18 of the NPDES permit associated with these facilities to reflect current
19 discharge limits. At this point in time, we estimate scrubber initial startup
20 may occur as early as May of 2010 and an estimated in-service date could
21 be as early as August of 2010.

22 **Q. WHAT IS THE CURRENT STATUS OF THE SCR?**

1 A. The Cope SCR was placed into service in December 2008 and
2 operated reliably during the test period.

3 **Q. WHAT OTHER ENVIRONMENTAL IMPROVEMENT PROJECTS**
4 **DOES THE COMPANY HAVE PLANNED?**

5 A. The Company will continue to invest in environmental
6 improvements on its system as required. At present, however, the
7 Company does not have any plans to install additional scrubbers or SCRs
8 on its other coal fired generation fleet. The completion of Summer Station
9 Units 2 & 3 will add 1,228 MW of new, non-emitting base load generation
10 to SCE&G's fleet. That new nuclear generation will substantially reduce
11 SCE&G reliance on older, coal-fired generation.

12 **SALUDA DAM REMEDIATION PROJECT AND**
13 **SYNFUEL TAX CREDITS**

14 **Q. PLEASE DISCUSS THE COMPANY'S REQUEST REGARDING**
15 **THE CAPITAL COSTS ASSOCIATED WITH THE SALUDA DAM**
16 **REMEDATION PROJECT.**

17 A. In Commission Order No. 2005-2, the Commission approved the
18 request of the Company to establish an account outside of rate base where
19 all costs related to the remediation project at the Company's Saluda Dam
20 would be accumulated. The Commission approved the Company's request
21 to hold these costs in a separate account outside of rate base to allow an
22 offset of the after-tax construction costs with federal income tax credits

1 generated by the Company's involvement in partnerships that produce
2 synthetic fuels consumed on the Company's system, net of the operating
3 losses incurred by these partnerships ("synthetic fuel tax credits"). These
4 partnerships were non-regulated ventures for which SCE&G's electric
5 customers were not responsible. SCE&G decided, nonetheless, to use tax
6 benefits generated by these partnerships to reduce costs to its customers
7 related to the remediation project.

8 **Q. WHY WAS THE REMEDIATION PROJECT NECESSARY?**

9 A. This project was undertaken pursuant to orders of the FERC, which
10 regulates dam safety for hydroelectric projects of this size. FERC
11 determined that the Saluda Dam, which was placed in service in 1930,
12 would not withstand an earthquake of the magnitude of the Charleston
13 Earthquake of 1886 and thus, to protect the downstream population,
14 ordered the Company to construct a second dam to impound water from
15 Lake Murray in the event of a breach of the original Saluda Dam. The
16 second dam was constructed solely to meet FERC safety requirements and
17 does not increase generation at the Saluda Hydro Station.

18 **Q. WHAT IS THE NET SAVINGS TO SCE&G'S CUSTOMERS IN THE**
19 **TEST YEAR AS A RESULT OF SCE&G'S USE OF THE**
20 **SYNTHETIC FUEL TAX CREDITS TO OFF-SET DAM**
21 **REMEDATION COSTS?**

1 A. Had the full \$328.6 million cost of the dam remediation been added
2 to rate base, the resulting revenue requirement, including taxes and
3 depreciation would have been nearly \$40 million higher.

4 **TURBINE MAINTENANCE**

5 **Q. PLEASE DISCUSS THE COMPANY'S REQUEST REGARDING**
6 **THE TURBINE MAINTENANCE ACCRUAL.**

7 A. In Commission Order No. 2005-2, the Commission approved
8 SCE&G's request to levelize over an 8 year maintenance cycle the costs
9 associated with major maintenance of the turbines at its fossil fuel
10 generating facilities. Turbine maintenance is critical to maintaining the
11 reliability of SCE&G coal and combined cycle generation fleet, and
12 preventing destructive failures in the turbines that power these units. While
13 in operation, these turbines rotate at high speeds under heavy loading and if
14 they experience a mechanical failure, the resulting damage can be
15 extensive.

16 For those reasons, turbine maintenance is a necessary expense of
17 power generation that is both known and measurable since turbine
18 maintenance costs and schedules are well understood in the industry.
19 However, the amount of turbine maintenance expense incurred in any given
20 test period varies significantly according to which plants have scheduled
21 outages during the test period and where those plants are in their turbine
22 maintenance cycles when those outages occur. In addition, as discussed at

1 length in the 2004 rate proceeding, SCE&G has been offered turbine
2 maintenance agreements with annual payments that would levelize the cost
3 contractually. However, in some cases, the Company has concluded that it
4 can perform the work less expensively if it retains the role of prime
5 contractor. The turbine maintenance accrual removes what would
6 otherwise be a regulatory disadvantage from SCE&G pursuing the least-
7 cost alternative in providing for turbine maintenance.

8 In the 2004 rate proceeding, SCE&G requested that it be allowed to
9 set a levelized amount for turbine maintenance expense and record in a
10 regulatory asset or liability account the differences between the levelized
11 amount and the actual amount of turbine O&M expenses incurred. The
12 goal of annualizing the turbine O&M expenses was to properly match
13 maintenance expenses with the year-by-year use of the plants that cause
14 such expense to be incurred. The Commission also found the annualization
15 of these O&M expenses to be just and reasonable and ordered that the
16 requested accounts be established, subject to review following the
17 submission of a report filed by SCE&G with ORS and the Commission
18 concerning the results of this treatment at the end of calendar year 2007.

19 SCE&G filed the required report with ORS and the Commission
20 and, in Order No. 2008-528, the Commission found that the actual
21 maintenance expenditures were not significantly different from the annual
22 expenditure levels anticipated when the accruals were established. No

1 adjustment in the amount of the accrual was necessary. An updated version
2 of the report, as required by Order No. 2008-528, is attached as Exhibit ____
3 (SAB-1). It shows that during the first four years of the accrual there
4 continued to be a close match between actual turbine maintenance costs and
5 accrued cost.

6 **Q. WHY IS A CHANGE REQUIRED?**

7 A. As I discuss in more detail below, the more intense usage of its
8 combined cycle plants, the aging of its generating fleet, and the inclusion of
9 Williams Station turbine maintenance expenses in the annual turbine
10 maintenance expense calculation have increased the amount of the annual
11 accrual necessary to levelize SCE&G's maintenance expense. For that
12 reason, in this proceeding SCE&G is asking to increase the turbine
13 maintenance accrual to reflect updated projections of actual expenses going
14 forward. To mitigate the impact of these changes, SCE&G is asking to
15 establish an accrual period through 2018. I would emphasize that turbine
16 maintenance is not optional. Our proposal simply levelizes the costs to
17 customers.

18 **Q. WHAT WAS THE ANNUAL ACCRUAL FOR TURBINE**
19 **MAINTENANCE DURING THE TEST YEAR?**

20 A. The annual accrual for turbine maintenance expense during the test
21 period was \$8.5 million.

1 **Q. WHAT IS THE INCREASE IN ANNUAL ACCRUAL THAT THE**
2 **COMPANY IS REQUESTING?**

3 A. In order to properly match maintenance expense with the year-by-
4 year use of the plants that cause such expenses to be incurred, an increase
5 of approximately \$10.8 million is being requested.

6 **Q. PLEASE DISCUSS THE REASONS FOR THIS INCREASE.**

7 A. Part of the reason for the requested increase is that as system
8 demand grows, the Company is becoming more reliant on its combined
9 cycle plants. The Company anticipates this increased usage to continue for
10 the foreseeable future. Turbine maintenance is a function both of the
11 number of times a unit starts and the number of run hours for the units. In
12 2009, SCE&G ran combined cycle gas plants much more than in the past.
13 In addition, as demands increase on our system going forward, both the
14 number of starts and run times of these combined cycle units increase. Our
15 generation planning forecasts establish the expected use of our plants over
16 the 10-year levelization period. These forecasts show the effects of this
17 increased usage of combined cycle units. The turbine maintenance
18 schedules on which the updated accrual amounts are based have been
19 generated using current generation planning forecasts.

20 Also included in updated accrual is the anticipated cost of
21 maintenance of the Williams Station turbines which are being included in
22 the turbine maintenance cost calculation for the first time. Williams Station

1 is owned by GENCO, which is a wholly owned subsidiary of SCANA.
2 SCE&G pays all costs of power provided by Williams Station, including
3 turbine maintenance expense, under a formula rate approved by the FERC.
4 SCE&G is proposing to include turbine maintenance expense for Williams
5 in the turbine maintenance calculation to levelize these costs for the same
6 reasons that it levelizes the costs for its sister plants.

7 **Q. WHAT HAS THE COMPANY DONE TO TRY TO MINIMIZE THE**
8 **INCREASE IN TURBINE MAINTENANCE COSTS?**

9 A. The Company has, where possible and where it makes good
10 economic sense, entered into maintenance agreements with third parties for
11 the provision of certain maintenance and monitoring services. For
12 example, the Company has entered into a long-term maintenance agreement
13 with General Electric (“GE”) at the Company’s Urquhart Combined Cycle
14 Plant. Under this maintenance agreement, in addition to regular
15 maintenance, GE provides the Company with a dedicated maintenance
16 engineer and dynamic monitoring of the plant at no additional cost and
17 provides for discounts on equipment costs. Often, however, SCE&G can
18 obtain better prices for ancillary parts of a maintenance project than it can
19 obtain where an original equipment manufacturer serves as prime
20 contractor. When that is the case, SCE&G serves in that role.

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COAL INVENTORIES

3 **Q. WHY ARE COAL INVENTORIES IMPORTANT?**

4 A. Coal is the primary fuel for much of the Company's baseload
5 capacity and without adequate coal supplies the Company cannot meet its
6 obligation to provide reliable service to its customers. Coal, however, is
7 not a "just-in-time" fuel like natural gas. Coal is delivered in dedicated rail
8 shipments or barge shipments with volumes in the range of 10,000 tons to
9 50,000 tons. These shipments must be contracted for and scheduled
10 months in advance of delivery. After it is delivered, coal is stored on the
11 coal pile located at each plant. The Company's ability to depend on a coal
12 plant to provide service when needed depends in turn on having an
13 adequate inventory on the coal pile to absorb problems in coal delivery or
14 to provide reserves during periods of unexpectedly high coal "burn rates"
15 that occur during times of high demand for electricity. Providing for a
16 sufficient supply of coal, with sufficient reserves on the coal pile, is one of
17 the key requirements for the Company to operate its system efficiently.

18 **Q. HOW DOES THE COMPANY APPROACH COAL**
19 **PROCUREMENT?**

20 A. Coal is procured with long-term agreements (more than one year)
21 and spot purchase agreements (up to one year) to achieve a balance of
22 reliable supplies, while maintaining flexibility to react to market changes or

1 short-term system needs. The Company's goal is for long-term purchases to
2 represent approximately 75 to 80 percent of projected system demand.
3 These long-term contracts provide a base of dependable, committed supply.
4 Most long-term contracts are for deliveries over three years, and the
5 Company attempts to stagger its contracts so that one-third of its contracts
6 are renegotiated every year.

7 Spot purchases provide the mechanism to manage inventories and
8 react to short-term changes in the marketplace. The Company can increase
9 its spot purchases if needs are greater than projected, or forego them if
10 requirements fall below projections. By utilizing a combination of long
11 term contracts and spot purchases, SCE&G has been successful in
12 managing its inventory levels in most periods.

13 **Q. HOW DOES SCE&G INSURE THAT THE RIGHT QUANTITY OF**
14 **COAL SUPPLIES IS AVAILABLE TO MEET GENERATION**
15 **DEMANDS?**

16 A. SCE&G uses several methods to bring the fuel supply and demand
17 factors together. Fuel usage levels are calculated for future years based on
18 the system resource modeling that is performed by our Resource Planning
19 Department. This modeling takes forecasted customer demands and
20 determines how our generation resources will be dispatched to meet those
21 demands. The resulting forecasts show how intensely our coal plants and
22 other plants will be used, and the anticipated coal burn for each plant can

1 be calculated from these forecasts. Coal inventories are then validated and
2 contract quantities are summed and compared against system coal usage to
3 determine coal needs going forward. With this information, Fuel
4 Procurement determines whether contract options, spot purchases or
5 additional long term agreements are appropriate.

6 **Q. PLEASE SUMMARIZE THE QUANTITY AND TERM OF THE**
7 **COMPANY'S COAL PURCHASES.**

8 A. During 2009, the Company took delivery of approximately 4.5
9 million tons of coal under long-term agreements and 1.2 million tons of
10 spot purchases, all of which had been contracted before 2009. Long-term
11 agreements provided approximately 79% of the requirement for the
12 Company's five coal-fired stations, and GENCO's Williams Station.

13 For the period of January 2010 through December 2010, the
14 Company has long-term contracts with 10 suppliers totaling 5.2 million
15 tons of coal and representing approximately 97% of expected total
16 receipts. Most of these contracts are for a period of three years with some
17 options to renew.

18 For the January 2011 through December 2011 period, the Company
19 projects to have long-term contracts with 9 suppliers totaling approximately
20 3.9 million tons of coal and representing approximately 80% of the total
21 anticipated coal receipts depending on final contract negotiations.

1 **Q. PLEASE IDENTIFY WHAT FACTORS HAVE IMPACTED THE**
2 **COMPANY’S CURRENT COAL INVENTORY.**

3 A. In 2009, the use of coal dropped dramatically on our system. In fact,
4 in 2009 the total burn of coal was approximately 25.5% less than in 2008.
5 This reduction equates to 1,633,847 tons or approximately 14,600 rail cars
6 of coal. This reduction in coal consumption was largely due to reduced
7 demand for energy caused by the economic recession coupled with very
8 low prices for natural gas during much of the test year. The low natural gas
9 prices meant that SCE&G’s combined cycle natural gas plants displaced a
10 significant amount of coal generation for extended periods during the test
11 year, resulting in much less coal leaving the coal piles than forecasted.
12 Consequently, coal inventories grew as SCE&G continued to receive coal
13 under contracts negotiated in prior periods.

14 **Q. PLEASE BRIEFLY DISCUSS HOW THE COAL MARKET HAS**
15 **CHANGED OVER THE PAST SEVERAL YEARS.**

16 A. Coal prices were quite stable until recent years but began to
17 experience extreme volatility beginning in 2007. From November 2007 to
18 July of 2008, free-on-board (“f.o.b.”) mine prices rose from about \$40 per
19 ton to over \$150 per ton. The f.o.b. mine price is the price of coal loaded
20 “free on board” rail cars at the mine before transportation costs are
21 included. These price increases were driven by increased global demands
22 for energy, mining and transportation problems in foreign coal producing

1 countries, coal mining constraints in the U.S. and an unprecedented
2 increase in U.S. coal exports. During that period, the United States became
3 a major exporter of coal to Europe largely to replace coal supplies from
4 other regions that had been diverted to Asia. Rail transportation costs
5 increased dramatically during that time also.

6 **Q. WHAT EFFECT DID THESE CHANGES IN COAL MARKETS**
7 **HAVE ON SCE&G?**

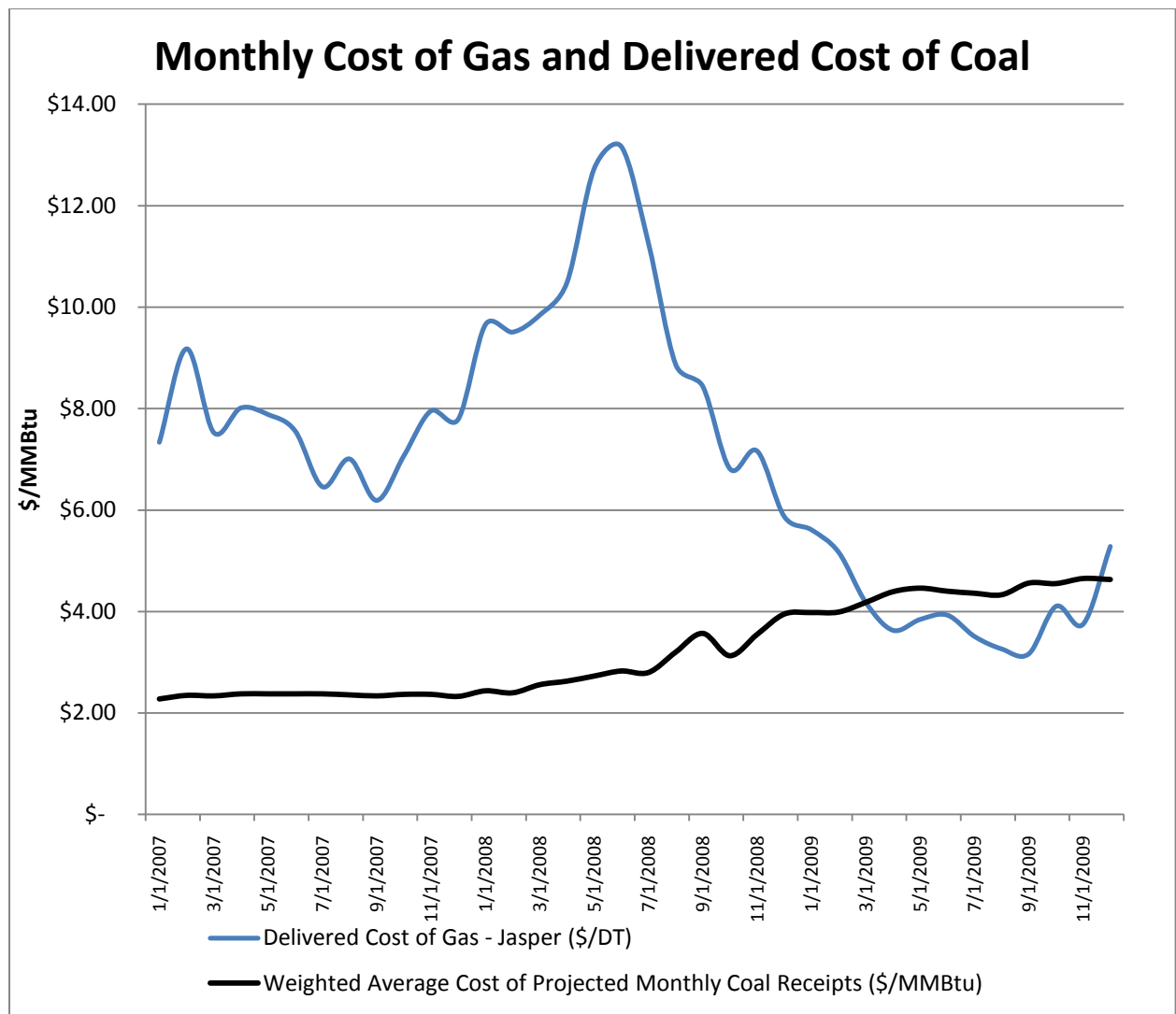
8 A. In 2007 and 2008, U.S. coal exports rose to unprecedented high
9 volumes, and large quantities of coal were diverted to lucrative export
10 markets. Expansion of production was limited in the Central Appalachian
11 coal fields which serve SCE&G by several factors, including deteriorating
12 geologic conditions, the inability to secure mining permits in a timely
13 fashion, increased mining rules and regulations, and a “tight” labor market.
14 Problems with railroads further complicated the situation as rail resources
15 proved inadequate to meet the requirement of both domestic markets and
16 shipments of coal to ports for export. During this period, SCE&G
17 experienced significant problems with rail deliveries of coal. Also during
18 this period, certain of SCE&G’s suppliers gave notice that they would be
19 unable to perform under the terms of their contracts for coal supply with
20 SCE&G. These non-performance events resulted in significant interruption
21 of SCE&G’s expected deliveries of coal supplies and the Company

1 experienced levels of coal inventory that were substantially below its
2 targets.

3 When the current economic crisis reduced demand for coal both
4 globally and domestically, the situation reversed itself. The export market
5 contracted and spot prices fell sharply. Rail delivery problems disappeared.
6 SCE&G's long-term suppliers insisted on delivering all the coal that they
7 could require SCE&G to accept under the long-term contracts in place at
8 that time. At the same time, demand for coal on our system dropped
9 dramatically due both to lower energy usage and changes in the relative
10 prices of coal and natural gas. The result was increasing inventory levels as
11 coal deliveries exceeded the burn rate of our plants.

12 **Q. PLEASE ELABORATE ON THE ROLE THAT GAS PRICES**
13 **PLAYED IN THIS RESULT.**

14 A. Beginning around March 2009, the monthly cost of natural gas
15 dropped below the cost of delivered coal. As gas became more affordable
16 in relation to coal, the Company adjusted the dispatch order of its plants
17 and began dispatching its gas operated facilities before it dispatched its
18 coal-fired ones. This resulted in a reduction in the coal burn well below
19 anticipated levels and a gradual build up of the coal inventory. The price of
20 gas remained lower relative to the price of coal through the end of the test
21 year. The chart below demonstrates the relative costs of gas and coal for
22 the past three years.



Q. WHAT STEPS HAS SCE&G TAKEN TO MANAGE ITS INVENTORY LEVEL?

A. First of all, SCE&G did not contract for any new spot coal supplies in 2009. Also, during 2009, SCE&G renegotiated several long-term coal contracts. As explained earlier, the Company staggers its long-term coal contracts so that approximately one-third of the contracts expire each year. In renegotiating contracts, the Company worked with suppliers to defer current coal deliveries to later periods wherever reasonably possible.

1 Moreover, the Company will continue to manage the inventory level
2 throughout 2010 as we strive to return the inventory level to our traditional
3 goal of a 708,333 ton yearly average. As of the end of the test period, the
4 coal inventory level was at 1,257,492 tons due to the factors discussed
5 above.

6 **Q. WHAT IS THE COMPANY’S PLAN AND FORECAST FOR COAL**
7 **GOING FORWARD?**

8 A. Looking forward into 2010, we expect our needs for coal will be
9 primarily met by deliveries under our long term contracts. Spot purchases
10 in 2010 are projected to be approximately 3%, which is a minimal amount
11 compared to our goal of 20% to 25%.

12 **Q. HOW DOES THE COMPANY PROPOSE TO TREAT ITS COAL**
13 **INVENTORY IN ITS APPLICATION?**

14 A. In this filing, the Company has adjusted the test period inventories to
15 reflect average forecasted coal inventories for the period October 2009 to
16 November 2011. Given the rapidly rising size and value of the inventory
17 during the test period, setting rates based on the average inventory value
18 over the test period would understate the true level of expected inventory
19 when new rates will be in effect. A more realistic assessment of expected
20 inventories requires looking at inventory levels when rates will be in effect.
21 To make this assessment, the Company has chosen the period October 2009

1 to November 2011. This period allows for a representative and reasonable
2 measure of the likely value of coal inventory levels when rates are in effect.

3 **GENERATION PLANNING**

4 **Q. PLEASE DESCRIBE THE CURRENT STATUS OF SCE&G'S NEW**
5 **NUCLEAR CONSTRUCTION.**

6 A. As the Commission is aware, SCE&G recently filed its Quarterly
7 Report for the period ending December 31, 2009 regarding the ongoing
8 construction of two new Westinghouse AP1000 units at the Company's
9 V.C. Summer Nuclear Station. As described in more detail in the report,
10 the construction is on schedule to achieve substantial completion in 2016
11 and 2019 for the two units. As of the end of the 4th quarter 2009, the
12 Company had met all current milestones approved by the Commission in
13 Order No. 2010-12, as adjusted pursuant to contingencies authorized in
14 Order No. 2009-104(A). The Company, the industry, Westinghouse and
15 the NRC continue to work together to ensure that the Combined Operating
16 License for the units will be issued in a timely fashion. The Company is
17 confident that this can be done and that the units can be completed on time
18 and within the Commission approved cost schedule.

19 **Q. WHAT ARE THE COMPANY'S ANTICIPATED PLANS FOR**
20 **ADDING NEW GENERATION, IF ANY, IN ADVANCE OF THE**
21 **OPERATIONAL DATES FOR THE NEW NUCLEAR UNITS?**

1 A. We have no plans to add any additional generating capability prior to
2 the operational date for the second new nuclear unit in 2019.

3 **CONCLUSION**

4 **Q. IN SUMMARY, WHAT ARE YOU ASKING THIS COMMISSION**
5 **TO DO?**

6 A. On behalf of SCE&G, I would ask the Commission to approve the
7 Application in this matter as filed.

8 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

9 A. Yes, it does.

Major Maintenance Accrual

\$67,711,280 over 8 years

2005 - 2012

Interest Rate

Annual 8.64%

Monthly 0.72%

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Table A : Overall Cost / Rate = **8.64%**

	<u>Balance @ 12/31/07</u>	<u>2008 Activity</u>	<u>2009 Activity</u>	<u>Balance @ 09/30/09</u>
Actual Expenses	(23,710,713.90)	(7,714,485.95)	(9,326,019.59)	(40,751,219.44)
Accrued Expenses	<u>25,391,729.96</u>	<u>8,463,910.00</u>	<u>6,347,932.50</u>	<u>40,203,572.46</u>
Regulatory Liability - Major Maint Accrual	(1,681,016.06)	(749,424.05)	2,430,440.11	-
Regulatory Asset - Major Maint Accrual			547,646.98	547,646.98
Regulatory Liability - MJM Accrual Interest	<u>(924,811.64)</u>	<u>(191,266.45)</u>	<u>(59,717.93)</u>	<u>(1,175,796.02)</u>
Total Major Maintenance and Interest Accrual	(2,605,827.70)	(940,690.50)	2,918,369.16	(628,149.04)